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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**In re Application of:**

Dryer et al.

**Serial No.:** 09/257,208

**Group Art Unit:** 2174

**Filed:** February 25, 1999

**Examiner:** Sax, S.

**For:** METHOD AND SYSTEM FOR REAL-TIME DETERMINATION OF A  
SUBJECTS INTEREST LEVEL TO MEDIA CONTENT

Honorable Assistant Commissioner of Patents  
Washington, D.C. 20231

**APPELLANT'S SECOND BRIEF ON APPEAL**

Sir:

Appellant respectfully files this Second Appeal Brief in response to the Notice of Non-compliant Appeal Brief dated July 13, 2005 in which the Examiner alleged that the Appeal Brief filed on April 22, 2005 is defective.

Appellant respectfully appeals the final rejection of claims 1-67 in the Office Action dated November 22, 2004. A Notice of Appeal was filed herein on February 22, 2005.

**I. REAL PARTY IN INTEREST**

The real party in interest is International Business Machines Corporation, assignee of 100% interest of the above-referenced patent application.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to Appellant, Appellant's legal representative or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

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### III. STATUS OF CLAIMS

Claims 1-67 are all the claims presently pending in the application and are set forth fully in the attached Appendix.

Claims 1-61 and 65-66 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220). Claims 62-64 and 67 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220) and further in view of Handel et al. (U. S. Patent No. 6,195,651).

Appellant respectfully appeals these rejections.

### IV STATEMENT OF AFTER-FINAL AMENDMENTS

Appellant notes that an Amendment which amended independent claims 1, 12, 23, 34, 45 and 53-55 to include the limitation of claim 62 (e.g., "*wherein said determining means adaptively infers said level of interest*") was filed on January 25, 2005. However, in an Advisory Action dated March 1, 2005, the Examiner stated that he refused to enter the Amendment because it raised new issues, stating "although previously claim 62 showed this feature, it is now combined with the features of the other dependent claims and thus those claims require further search and consideration in view of the new combination of features".

Appellant respectfully submits that the Amendment filed herein on January 25, 2005 clearly does not "raise new issues" as alleged by the Examiner. Therefore, on April 21, 2005, Appellant filed a Second After-Final Amendment which was substantially the same as the January 25th Amendment, to request that the Examiner reconsider his unreasonable refusal of entering the January 25th Amendment.

In a Notice of Non-Compliant Appeal Brief dated July 13, 2005, the Examiner again refused to enter the After-Final Amendment filed on January 25, 2005 and the Second After-Final Amendment filed on April 21, 2005.

This Second Appeal Brief is filed in response to the Notice of Non-Compliant Appeal

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Brief dated July 13, 2005, and is filed concurrently with the filing of a Petition Under 37 CFR 1.181 to Force Entry of the Amendment filed on January 25, 2005 (or the Amendment filed on April 21, 2005).

Appellant notes that the pending claims are included in the Appendix attached hereto.

## V. SUMMARY OF THE INVENTION

The claimed invention (e.g., as recited in **claim 1**) is directed to a system for unobtrusively detecting a subject's level of interest in media content. The system includes means (e.g., a gaze-tracking device 502 (page 20, line 13); tracking camera; eye position analyzer; motion detector; page 10, line 7-page 11, line 20) for detecting a subject's attention to the media content, means (e.g., arousal-level indicator measurement device 504 (page 20, line 15), eye tracker; head gesture detector, nod detector, yawn detector, blink rate/duration detector, pupil size detector, audio utterance detector, facial feature (e.g., eyebrows and mouth) position/motion detector page 12, line 10-page 17, line 12) for measuring the subject's relative arousal level, and means (e.g., interest level inference engine 505, computer/CPU, signal-bearing media containing machine-readable instructions; Bayesian belief network, a decision tree, a neural network, etc.; Application at page 17, line 9-page 20, line 5; Figures 5 and 6) for determining the level of interest based on information regarding the subject's arousal level and the subject's attention to the media content.

The claimed invention (e.g., as recited in **claim 12**) is directed to a system for unobtrusively detecting an object of a subject's interest in media content. The system includes means (e.g., a gaze-tracking device 502 (page 20, line 13); tracking camera; eye position analyzer; motion detector; page 10, line 7-page 11, line 20) for detecting an object of the subject's attention, means (e.g., arousal-level indicator measurement device 504 (page 20, line 15), eye tracker; head gesture detector, nod detector, yawn detector, blink rate/duration detector, pupil size detector, audio utterance detector, facial feature (e.g., eyebrows and mouth) position/motion detector page 12, line 10-page 17, line 12) for measuring the subject's relative arousal level, and means (e.g., interest level inference engine 505, computer/CPU, signal-bearing media containing

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machine-readable instructions; Bayesian belief network, a decision tree, a neural network, etc.;  
Application at page 17, line 9-page 20, line 5; Figures 5 and 6) for determining the level of  
interest based on information regarding the subject's arousal level and the subject's attention to  
the media content.

The claimed invention (e.g., as recited in **claim 23**) is directed to a method of unobtrusively detecting a subject's level of interest in media content. The method includes detecting a subject of the subject's attention, measuring a subject's relative arousal level, and determining the level of interest based on information regarding the subject's arousal level and the subject's attention to the media content (Application at page 17, line 9-page 20, line 5; page 21, lines Figures 5 and 6).

The claimed invention (e.g., as recited in **claim 34**) is directed to a method of unobtrusively detecting the object of a subject's interest in media content. The method includes detecting the object of the subject's attention, measuring the subject's relative arousal level, and determining the level of interest based on information regarding the subject's arousal level and the subject's attention to the media content (Application at page 17, line 9-page 20, line 5; page 21, lines Figures 5 and 6).

The claimed invention (e.g., as recited in **claim 45**) is directed to a method for detecting a person's level of interest in media content. The method includes assessing whether a person is attending to the media content, to produce first data, assessing a person's relative arousal level with regard to the media content, to produce second data, determining the level of interest in the media content based on the first and second data (Application at page 17, line 9-page 20, line 5; Figures 5 and 6), and communicating the level of interest as feedback about the media content to a manager of the media content.

The claimed invention (e.g., as recited in **claim 53**) is directed to a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for computer-implemented unobtrusive detection of a subject's level of interest in media content. The method includes detecting an object of the subject's attention, measuring a subject's relative arousal level, and determining the level of

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interest based on information regarding the subject's arousal level and the subject's attention (Application at page 17, line 9-page 20, line 5; Figures 5 and 6).

The claimed invention (e.g., as recited in **claim 54**) is directed to a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for computer- implemented unobtrusive detection of a subject's level of interest in media content. The method includes assessing whether a subject is attending to the media content, to produce first data, assessing a subject's relative arousal level with regard to the media content, to produce second data, determining the level of interest in the media content based on the first and second data (Application at page 17, line 9-page 20, line 5; Figures 5 and 6), and communicating the level of interest as feedback about the media content to a manager of the media content.

The claimed invention (e.g., as recited in **claim 55**) is directed to a system for unobtrusively measuring a subject's interest in media content. The system includes a detector for detecting a subject's attention to the media content, a measuring device which measures a subject's arousal level, and an inference engine which infers subject's interest level based on information regarding the subject's arousal level and the subject's attention to the media content (Application at page 17, line 9-page 20, line 5; Figures 5 and 6).

Conventional systems for measuring a subject's interest often estimate a mental decision by monitoring a subject's gaze direction and EEG to detect when a subject is looking at a visual target. Other systems remotely determine a subject's emotional state by broadcasting a waveform of predetermined frequency and energy at the subject, and analyzing the emitted energy to determine physiological parameters (e.g., respiration, pulse, blood pressure, etc.). However, these systems cannot measure a subject's interest in real-time by passively observing the subject.

The claimed invention, on the other hand, uses a subject's arousal level and attention to infer a level of interest (Application at Figure 1; page 22, lines 10-15; page 17, line 9-page 20, line 5; Figures 5 and 6). That is, the claimed invention may integrate gaze-tracking with an arousal-level assessment mechanism and an information source (e.g., a display such as a ticker display). Therefore, the claimed system is able to reliably assess the subject's interest level in

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real-time by passively observing the subject (e.g., without requiring the subject to take any explicit action).

## VI. GROUNDS OF REJECTION TO BE REVIEWED

The grounds of rejection to be reviewed by the Board of Patent Appeals and Interferences include:

- 1) rejection of claims 1-61 and 65-66 under 35 U.S.C. §103(a) over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220); and
- 2) rejection of claims 62-64 and 67 under 35 U.S.C. §103(a) over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220) and further in view of Handel et al. (U. S. Patent No. 6,195,651).

## VIII. ARGUMENT

### A. The Rejection of claims 1-61 and 65-66 under 35 U.S.C. §103(a) over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220)

As set forth on pages 2-5 of the Office Action dated November 22, 2004, the Examiner rejected claims 1-61 and 65-66 stating:

*Regarding claim 1, Tognazzini et al show an unobtrusive system for determining a subject's level of interest (column 5 lines 55-68, column 6, lines 1-7, column 9 lines 55-67, column 10, lines 1-15). Tognazzini et al show detecting information regarding what a subject is gazing at or 'attending to' (column 5 lines 54-68, column 6 lines 1-25, column 8, lines 5-19) to determine level of attentiveness to media images and objects on a network. The web browser information (column 11, lines 15-45) are all examples of media. See also Figure 15 and column 16, lines 16-30 for the electronic newspaper example. The gaze tracker device (Tognazzini column 9, lines 45-60) is in real time. Tognazzini et al do not specifically show arousal level per se, but do show user*

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*characteristic (gazing) to determine level of interest. Furthermore, Black et al show arousal level by facial expressions (column 3 lines 37-65, column 4, lines 30-50, column 28, lines 30-57) to determine interest. It would have been obvious to a person of ordinary skill in the art to show arousal level in Tognazzini et al, because it would allow a convenient way to utilize user characteristics to determine level of interest."*

With respect to claims 2-61 and 65-66, the Examiner stated as follows:

*"Regarding claim 2, Tognazzini et al show as explained above the gaze determination";*

*"Regarding claim 3, Tognazzini et al show determining the fixation time of the gaze (column 10 lines 35-44)";*

*"Regarding claim 4, Tognazzini et al show in column 11 lines 15-45 the detecting attention to media content";*

*"Regarding claims 5-10, Black et al show measuring the subject's facial expressions, head gestures, and speech (column 27 lines 20-41, column 28 lines 30-60). The obviousness to combine is as stated above";*

*"Regarding claim 11, Tognazzini et al show providing relevance feedback (column 6 lines 19-25)";*

*"Claims 12-22, 23-33, 34-44 each show the same features as 1-11 respectively and are rejected for the same reasons";*

*"Claims 45-52 show the same features as 1-7 and 11 and are rejected for the same reasons";*

*"Claims 53-55 show the same features as claim 1 and are rejected for the same reasons";*

*"Regarding claim 56, as noted, Black et al show measuring the facial and head gestures (column 8 lines 5-29). The claim recites 'includes one of ...' and therefore since Ball et al show at least one of these elements, it therefore covers the claim";*

*"Regarding claim 57, as noted, Tognazzini et al show the gaze fixation density and pupil size attribute (column 10 lines 35-44). Black et al show the audio utterance*

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*(speech), and upper body movement (head gesture) (again column 27 lines 20-41 and column 28 lines 30-60)";*

*"Regarding claim 58, Tognazzini shows providing additional media content as feedback (column 6 lines 19-25) and operates in real time (column 9 lines 45-60)";*

*"Claims 59-61 show the same features as 56-58 and are rejected for the same reasons";*

*"Regarding claim 65, the detecting means in Tognazzini et al (column 10 lines 10-30), and the measuring means in Black et al (column 7 lines 17-35), both output to a determining means. Given the combination, this would then be the same determining means";*

*"Regarding claim 66, per the obviousness to combine both references as stated in paragraph 4 of this Office Action, since the arousal level is then used to help determine level of interest, the attention would first have to be detected to determine the particular interest, and then the arousal level measured to help determine level of interest".*

#### **1. Independent claim 1**

Independent claim 1 recites:

*"A system for unobtrusively detecting a subject's level of interest in media content, comprising:*

*means for detecting a subject's attention to said media content;*

*means for measuring said subject's relative arousal level; and*

*means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content."*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, Appellant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the



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claimed invention.

Tognazzini discloses a method and apparatus for determining what aspect of computer operation the user is interested in and responding accordingly (Tognazzini at col. 5, lines 57-59). Specifically, the apparatus may include a gaze-tracking device for monitoring a user's gaze.

Black, on the other hand, discloses an apparatus for tracking facial motion through a sequence of images (Black at Abstract).

However, Appellant submits that these references are directed to different problems and solutions. Specifically, Tognazzini is directed to a apparatus which uses a gaze-tracking system to assess a level of interest, whereas Black is directed to a system for recognizing facial expressions. Therefore, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Further, Appellant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. In fact, contrary to the Examiner allegations, neither of these references teach or suggest their combination. Therefore, Appellant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, Appellant respectfully submits that the Examiner failed to make a prima facie case of obviousness.

Moreover, neither of these references nor their combination teaches or suggests "*means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content*", as recited for example, in claim 1.

Unlike conventional systems for measuring a subject's interest which cannot adaptively infer the user's level of interest and thus, cannot adaptively display information in which the user has a high level of interest (e.g., display mainly information in which the user has a high level of interest), the claimed invention uses a subject's arousal level and attention to infer a level of interest (Application at Figure 1; page 22, lines 10-15; page 17, line 9-page 20, line 5; Figures 5 and 6).

That is, **the claimed invention may integrate gaze-tracking with an arousal-level**

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**assessment mechanism and an information source** (e.g., a display such as a ticker display).

Therefore, the claimed system is able to reliably assess the subject's interest level in real-time by **passively** observing the subject (e.g., without requiring the subject to take any explicit action).

For example, in one exemplary embodiment, the claimed invention uses a Bayesian Belief Network to adaptively infer the level of interest based on the information regarding the subject's arousal level and the subject's attention, (e.g., see Application at page 17, line 14-page 20, line 5; Figures 3 and 4). For example, using a Bayesian Belief Network, given a set of observations on the state of some variables in the network (e.g., subject's gaze fixation density, blink rate and duration, head movement, body movement, and facial expression) one can infer the most probable states for any unobserved variables (e.g., a subject's interest level) (Application at page 18, lines 12-20; Figures 3 and 4).

Clearly, these features are not taught or suggested by either Tognazzini or Black. Indeed, the Examiner alleges merely that Tognazzini shows "user characteristic (gazing) to determine level of interest" and that Black shows "arousal level by facial expressions ... to determine interest" (Office Action at page 3).

However, even assuming (arguendo) that the Examiner is correct, the Examiner has only alleged that that references show two elements of the claimed invention. That is, **the Examiner has not even alleged that the references teach or suggest "means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content"** and thus, has completely neglected an element of the claimed invention.

Indeed, Applicant submits that the present invention includes much more than merely gaze tracking and arousal detection. In fact, a large portion of the present Application is dedicated to a discussion of the means (e.g., interest level inference engine 505, computer/CPU, signal-bearing media containing machine-readable instructions; Bayesian belief network, a decision tree, a neural network, etc.; Application at page 17, line 9-page 20, line 5; Figures 5 and 6) for determining a level of interest based on information regarding the subject's arousal level and the subject's attention to the media content.

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However, the Examiner completely ignores this important feature of the claimed invention. Indeed, nowhere does the Examiner even allege that Tognazzini or Black teach or suggest means (e.g., interest level inference engine 505, computer/CPU, signal-bearing media containing machine-readable instructions; Bayesian belief network, a decision tree, a neural network, etc.; Application at page 17, line 9-page 20, line 5; Figures 5 and 6) for determining a level of interest based on information regarding the subject's arousal level and the subject's attention to the media content.

The Examiner alleges only that the references "mention determining level of interest based on user information". However, merely utilizing "user information" (e.g., user's reading speed) to determine interest clearly does not teach or suggest means (e.g., interest level inference engine 505, computer/CPU, signal-bearing media containing machine-readable instructions; Bayesian belief network, a decision tree, a neural network, etc.) for determining a level of interest based on information regarding the subject's arousal level and the subject's attention to the media content.

Therefore, Appellant submits that these references would not have been combined and even if combined and even if the claim elements are given their broadest reasonable interpretation, the combination would not teach or suggest each and every element of claim 1.

Therefore, the Board is respectfully requested to withdraw this rejection.

## 2. Independent Claim 12

Independent claim 12 recites:

*"A system for unobtrusively detecting an object of a subject's interest in media content, comprising:*

*means for detecting an object of said subject's attention;*

*means for measuring the subject's relative arousal level; and*

*means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content.*"

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Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content" as recited in claim 12.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 12.

Therefore, the Board is respectfully requested to withdraw this rejection.

### 3. Independent claim 23

Independent claim 23 recites:

*"A method of unobtrusively detecting a subject's level of interest in media content, comprising:*

*detecting a subject of said subject's attention;*

*measuring a subject's relative arousal level; and*

*determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content".*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content", as recited in claim 23.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated

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by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 23.

Therefore, the Board is respectfully requested to withdraw this rejection.

#### 4. Independent Claim 34

Independent claim 34 recites:

*"A method of unobtrusively detecting the object of a subject's interest in media content, comprising:*

*detecting the object of said subject's attention;*

*measuring the subject's relative arousal level; and*

*determining said level of interest based on information regarding the subject's arousal level and said subject's attention to said media content*".

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "*determining said level of interest based on information regarding the subject's arousal level and said subject's attention to said media content*", as recited in claim 34.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 34.

Therefore, the Board is respectfully requested to withdraw this rejection.

#### 5. Independent Claim 45

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Independent claim 45 recites:

*" A method for detecting a person's level of interest in media content, comprising:  
assessing whether a person is attending to the media content, to produce first data;  
assessing a person's relative arousal level with regard to the media content, to produce  
second data;  
determining said level of interest in said media content based on said first and  
second data; and  
communicating said level of interest as feedback about the media content to a  
manager of said media content".*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests *"determining said level of interest in said media content based on said first and second data"*, as recited in claim 45.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 45.

Therefore, the Board is respectfully requested to withdraw this rejection.

## 6. Independent Claim 53

Independent claim 53 recites:

*" A signal-bearing medium tangibly embodying a program of machine-readable  
instructions executable by a digital processing apparatus to perform a method for  
computer-implemented unobtrusive detection of a subject's level of interest in media content,  
said method comprising:*

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*detecting an object of said subject's attention;  
measuring a subject's relative arousal level; and  
determining said level of interest based on information regarding said subject's arousal level and said subject's attention".*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "*determining said level of interest based on information regarding said subject's arousal level and said subject's attention*", as recited in claim 53.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 53.

Therefore, the Board is respectfully requested to withdraw this rejection.

#### **7. Independent Claim 54**

Independent claim 54 recites:

*"A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for computer-implemented unobtrusive detection of a subject's level of interest in media content, said method comprising:*

*assessing whether a subject is attending to the media content, to produce first data;*

*assessing a subject's relative arousal level with regard to the media content, to produce second data;*

*determining said level of interest in said media content based on said first and second data; and*

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*communicating said level of interest as feedback about the media content to a manager of said media content".*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "*determining said level of interest in said media content based on said first and second data*", as recited in claim 54.

Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 54.

Therefore, the Board is respectfully requested to withdraw this rejection.

#### **8. Independent Claim 55**

Independent claim 55 recites:

*"A system for unobtrusively measuring a subject's interest in media content, comprising:  
a detector for detecting a subject's attention to said media content;  
a measuring device which measures a subject's arousal level; and  
an inference engine which infers subject's interest level based on information regarding said subject's arousal level and said subject's attention to said media content".*

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, neither Tognazzini, nor Black, nor any alleged combination thereof teaches or suggests "*an inference engine which infers subject's interest level based on information regarding said subject's arousal level and said subject's attention to said media content*", as recited in claim 55.



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Appellant notes that this feature is similar to the feature discussed above with respect to claim 1. Therefore, Appellant's arguments made above with respect to claim 1 are incorporated by reference herein.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claim 55.

Therefore, the Board is respectfully requested to withdraw this rejection.

#### 9. Dependent Claims 2 and 13

Claims 2 and 13 further recite "*wherein said detecting means includes means for determining a target to which a gaze of the subject is directed*". This feature is discussed in the present Application at page 10, line 14-page 12, line 9.

The Examiner asserts that this feature is disclosed in Tognazzini but does not specify where in Tognazzini it is disclosed.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 10. Dependent Claims 3 and 14

Claims 3 and 14 further recite "*wherein said determining means further includes means for determining a duration of fixation time of said gaze*". This feature is discussed in the present Application at page 17, line 9-page 20, line 5.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 10, lines 35-44.

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However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 11. Dependent Claims 4 and 15

Claims 4 and 15 further recite "*wherein said measuring means includes means for determining whether the subject is attending to the media content*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 11, lines 15-45.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 12. Dependent Claims 5 and 16

Claims 5 and 16 further recite "*wherein said measuring means further includes means for measuring the subject's facial gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

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However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

### 13. Dependent Claims 6 and 17

Claims 6 and 17 further recite "*wherein said measuring means further includes means for measuring the subject's facial gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

### 14. Dependent Claims 7 and 18

Claims 7 and 18 further recite "*wherein said measuring means further includes means for measuring the subject's speech*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

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However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 15. Dependent Claims 8 and 19

Claims 3 and 19 further recite "*wherein said measuring means includes means for measuring the subject's facial gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 16. Dependent Claims 9 and 20

Claims 9 and 20 further recite "*wherein said measuring means includes means for measuring the subject's head gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

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However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 17. Dependent Claims 10 and 21

Claims 10 and 21 further recite "*wherein said measuring means includes means for measuring the subject's speech*". This feature is discussed in the present Application at page 4, lines 22-23..

The Examiner asserts that this feature is disclosed in Tognazzini at col. 27, lines 20-41, col. 28, lines 30-60.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 18. Dependent Claims 11, 22 and 33

Claims 11, 22 and 33 further recite "*wherein said level of interest produced provides relevance feedback associated with said subject to a manager of said media content*". This feature is discussed in the present Application at page 7, lines 12-16.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 6, lines 19-25.

However, Appellant respectfully submits that the Examiner's position is flawed as a

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matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 19. Dependent Claims 24 and 35

Claims 24 and 35 further recite "*wherein said detecting includes determining a target to which a gaze of the subject is directed*". This feature is discussed in the present Application at page 10, line 14-page 12, line 9.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 20. Dependent Claim 25 and 36

Claims 25 and 36 further recite "*wherein said determining further includes determining a duration of fixation time of said gaze*". This feature is discussed in the present Application at page 17, line 9-page 20, line 5.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or

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suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

**21. Dependent Claim 26 and 37**

Claims 26 and 37 further recite "*wherein said measuring includes determining whether the subject is attending to the target information*". This feature is discussed in the present Application at page page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

**22. Dependent Claim 27 and 38**

Claims 27 and 38 further recite "*wherein said measuring further includes measuring the subject's facial gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been

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combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

### 23. Dependent Claim 28 and 39

Claims 28 and 39 further recite "*wherein said measuring further includes measuring the subject's head gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

### 24. Dependent Claim 29 and 40

Claims 29 and 40 further recite "*wherein said measuring further includes measuring the subject's speech*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this



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rejection.

**25. Dependent Claim 30 and 41**

Claims 10 and 41 further recite "*wherein said measuring includes measuring the subject's facial gestures*". This feature is discussed in the present Application at page 12, line 10- page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini at col. 2, lines 50-56.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

**26. Dependent Claim 31 and 42**

Claims 31 and 42 further recite "*wherein said measuring includes measuring the subject's head gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

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**27. Dependent Claim 32 and 43**

Claims 32 and 43 further recite "*wherein said measuring includes measuring the subject's speech*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited Figure teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

**28. Dependent Claims 44 and 52**

Claims 44 and 52 further recite "*wherein said level of interest produced provides relevance feedback associated with said subject*". This feature is discussed in the present Application at page 7, lines 12-16.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of these claims. Therefore, the Board is respectfully requested to withdraw this rejection.

**29. Dependent Claim 46**

Claim 46 further recites "*wherein said assessing includes determining a target to which a gaze of the person is directed*". This feature is discussed in the present Application at page 10,

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line 14-page 12, line 9.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere do the cited Figures teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 30. Dependent Claim 47

Claim 47 further recites "*wherein said assessing further includes determining a duration of fixation time of said gaze*". This feature is discussed in the present Application at page 17, line 9-page 20, line 5.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited Figure teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 31. Dependent Claim 48

Claim 48 further recites "*wherein said assessing includes determining whether the person is attending to the media content*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or

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suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 25. Dependent Claim 49

Claim 49 further recites "*wherein said assessing includes measuring a person's facial gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

#### 26. Dependent Claim 50

Claim 50 further recites "*wherein said assessing includes measuring the person's head gestures*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini. However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

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### 27. Dependent Claim 51

Claim 51 further recites "*wherein said assessing includes measuring the subject's speech*". This feature is discussed in the present Application at page 12, line 10-page 17, line 8.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 28. Dependent Claim 56

Claim 56 further recites "*wherein said physical attribute of said subject includes at least one of a facial gesture, a head gesture, a blink rate and blink duration, a relative position of an eyebrow, and a relative position of a mouth corner*". This feature is discussed in the present Application at page 18, lines 12-19.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 29. Dependent Claim 57

Claim 57 further recites "*wherein said physical attribute of said subject further includes at least one of an audio utterance, a gaze fixation density, a pupil size, upper body movement*". This feature is discussed in the present Application at page 14, lines 6-17.

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The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 30. Dependent Claim 58

Claim 58 further recites "*wherein additional media content is provided in real time to said subject based upon the inferred level of interest*". This feature is discussed in the present Application at page 6, lines 1-3.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 31. Dependent Claim 59

Claim 59 further recites "*wherein said physical attribute of said subject includes at least one of a facial gesture, a head gesture, a blink rate and blink duration, a relative position of an eyebrow, and a relative position of a mouth corner*". This feature is discussed in the present Application at page 18, line 12-19.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or

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suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 32. Dependent Claim 60

Claim 60 further recites "*wherein said physical attribute of said subject further includes at least one of an audio utterance, a gaze fixation density, a pupil size, and an upper body movement*". This feature is discussed in the present Application at page 14, lines 6-17.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

### 33. Dependent Claim 61

Claim 61 further recites "*wherein additional media content is provided in real time to said subject based upon the inferred level of interest*". This feature is discussed in the present Application at page 6, lines 1-3.

The Examiner asserts that this feature is disclosed in Tognazzini.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere does the cited passage teach or suggest this feature.

Therefore, Appellant respectfully submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of this claim. Therefore, the Board is respectfully requested to withdraw this rejection.

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**B. The Rejection of Claims 62-64 and 67 under 35 U.S.C. §103(a) over Tognazzini, et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini") in view of Black et al. (U. S. Patent No. 5,802,220) and further in view of Handel et al. (U. S. Patent No. 6,195,651).**

As set forth on pages 2-5 of the Office Action dated November 22, 2004, the Examiner rejected claims 1-61 and 65-66 stating:

*"Claims 62-64, 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini et al (5886683) and Black et al (5802220) and Handel et al (6195651).*

*"Regarding claim 62, in addition to that mentioned for claim 1, neither Tognazzini et al nor Black et al go into the details of adaptively inferring the level of interest, but do mention determining level of interest based on user information. Furthermore, it is common in the art to use intelligent systems to adaptively infer level of interest and other determinations, based on user information. See for example Handel et al (Figures 10A, 13, 25, column 29 lines 30-67. column 30 lines 1-15 and 33-49). It would have been obvious to a person with ordinary skill in the art to have the system suggested by Tognazzini et al and Black et al adaptively infer the level of interest, because it would provide a convenient way to determine level of interest based on user information".*

*"Regarding claim 63, (the claim only requires at least one), the way in which Handel et al adaptively infers the level of interest includes a decision tree (column 33 lines 15-60)".*

*"Claim 64 shows the same features as claim 62 and is rejected for the same reasons".*

*"Regarding claim 67, in addition to that mentioned for claim 1, neither Tognazzini et al nor Black et al go into the details of presenting more or less information based on level of interest, but do mention responding to user detected information. Furthermore,*



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*it is common in the art to use intelligent systems to adaptively respond to user detected information by presenting more or less of an item related to the information detected. See for example Handel et al (Figures 10A, 13, 25, column 29 lines 30-67. column 30 lines 1-15 and 33-49). It would have been obvious to a person with ordinary skill in the art to have the system suggested by Tognazzini et al and Black et al adaptively respond to the level of interest by providing more or less information, because it would provide a convenient way to respond to user detected information".*

The Examiner further stated:

*"Applicant's arguments filed 12/30/03 have been fully considered but they are not persuasive. The systems of Tognazzini et al and Black et al are in fact related, as both measure user information to determine a level of user interest. The system suggested by the combination, and in fact both references themselves, show determining level of interest based on user information. This includes the subject's attention to media content (Tognazzini et al) and subject's arousal level (Black et al). Note that the claim recitation of "determining... based on information" is broad. The newly added claims perhaps bring out more of the information analysis, and to this advancement the new art has been added".*

#### 1. Dependent Claim 62

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Specifically, Appellant submits that these references would not have been combined as alleged by the Examiner and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

First, Appellant notes that, as set forth in the Declaration filed herein on April 28, 2003, **and included in the Evidence Appendix attached hereto**, the claimed invention was completed in the United States before March 23, 1998 or alternatively was conceived prior to March 23, 1998, coupled with due diligence from just before March 23, 1998 to the filing date

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(e.g., constructive reduction to practice) of the Application on February 25, 1999. Appellant points out that this Declaration includes a disclosure entitled "*A system for real-time determination of a users (sic) level of interest to presented information*" which describes the claimed invention to include determining a level of interest by adaptively inferring the level of interest (e.g., see disclosure at fourth paragraph on page 5). Namely, the disclosure states:

*"[t]he next step is to merge this information into a measure of interest level. [This] is accomplished [by using] a neural net with the 11 inputs (blink rate, gesture distances, eyebrow distances, and mouth distances) 20 hidden units and 3 outputs. The outputs correspond to interested, uninterested and neutral".*

Thus, Appellant submits that Handel, which has an earliest U. S. filing date of November 19, 1998, has an effective reference date which is clearly after the date of invention of the claimed invention. Thus, **Handel is not prior art against the claimed invention.**

Further, even assuming (arguendo) that Handel has an effective reference date that is before the date of invention of the claimed invention, Appellant submits that Handel would not have been combined with any alleged Tognazzini/Black combination and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Handel discloses an Internet-based application for delivering services and providing a personalized experience for each customer via a personal web site (Handel at col. 29, lines 23-27).

Appellant submits that these references are directed to different problems and solutions and, thus, would not have been combined as alleged by the Examiner. Specifically, in contrast to Tognazzini which is related to gaze-tracking and Black which is related to recognizing facial expressions, Handel is related to a personal web site. Therefore, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Further, Appellant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. In fact, contrary to the

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Examiner allegations, neither of these references teach or suggest their combination.

Therefore, Appellant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Tognazzini, nor Black, nor Handel, nor any alleged combination of these references teaches or suggests “*wherein said means for determining said level of interest adaptively infers said level of interest*”, as recited for example, in claim 62.

As noted above, unlike conventional systems, the claimed invention includes a means for determining the level of interest which adaptively infers the level of interest (Application at page 17, line 9-page 20, line 11). This allows the claimed invention to “learn” a user’s particular interest, such that the system can adaptively provide information regarding such interests to the subject (Application at page 22, line 16-page 23, line 6).

Clearly, these features are not taught or suggested by Handel. Indeed, the Examiner attempts to rely on Figures 10A, 13, 25 and column 29, lines 30-67 and col. 30, lines 1-15 and 33-49 to support his position. However, nowhere do these drawings or passages teach or suggest adaptively inferring a level of interest.

For example, Figure 10A merely discloses a “customer profile database 1060” which contains personal information such as name, address, personal preferences, etc. (Handel at col. 30, lines 41-54). The system may use user content preferences to format a web page (e.g., Handel at col. 31, lines 1-25, but nowhere does Handel teach or suggest feeding back information into the database 1060 (e.g., based on an earlier behavior of the user) in order to update the database 1060. That is, the format of the web page will remain the same until the customer profile database 1060 is manually updated. That is, the Handel system does not utilize adaptive learning.

Similarly, none of the other drawings or passages on which the Examiner attempts to rely teach or suggest this novel feature. Indeed, even assuming (arguendo) that Handel may teach or suggest formatting a web page based on user content preferences, nowhere does Handel teach or suggest adaptively inferring a user preference to format a web page. That is, the Handel system

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in no way "adapts" by "learning" a preference of the user. In fact, Handel is completely unrelated to the claimed invention.

Therefore, Appellant respectfully submits that neither Tognazzini, nor Black, nor Handel, nor any alleged combination thereof teaches or suggests each and every element of the claimed invention as recited in claim. Further, Appellant submits that even if the claim elements are given their broadest reasonable interpretation, the combination would not teach or suggest each and every element of claim 62.

Therefore, the Board is respectfully requested to withdraw this rejection.

## 2. Dependent Claim 63

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Appellant notes that the arguments made with respect to claim 62 are similarly applicable here. Thus, Appellant incorporates herein by reference the arguments made above with respect to claim 62.

Further, claim 63 further recites "*wherein said determining means uses at least one of a Bayesian Belief Network, a decision tree and a neural network to determining said level of interest*". This feature is discussed in the present Application at page 17, lines 16-17.

The Examiner asserts that this feature is disclosed in Handel at col. 22, lines 15-60.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere do the cited columns teach or suggest this feature.

Therefore, Appellant respectfully submits that neither Tognazzini, nor Black, nor Handel, nor any alleged combination thereof teaches or suggests each and every element of the claimed invention as recited in claim 63. Therefore, the Board is respectfully requested to withdraw this rejection.

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### 3. Dependent Claim 64

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Appellant notes that the arguments made with respect to claim 62 are similarly applicable here. Thus, Appellant incorporates herein by reference the arguments made above with respect to claim 62.

Further, claim 64 further recites "*wherein said determining means comprises a means for adaptively learning said subject's level of interest in said media content*". This feature is discussed in the present Application at page 17, line 9-page 20, line 5.

The Examiner asserts that this feature is disclosed in Handel at Figures 10A, 12, 25, col. 29, lines 30-67, col. 30, lines 1-15 and 33-49.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere do the cited columns teach or suggest this feature.

Therefore, Appellant respectfully submits that neither Tognazzini, nor Black, nor Handel, nor any alleged combination thereof teaches or suggests each and every element of the claimed invention as recited in claim 63. Therefore, the Board is respectfully requested to withdraw this rejection.

### 4. Dependent Claim 67

Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law.

Appellant notes that the arguments made with respect to claim 62 are similarly applicable here. Thus, Appellant incorporates herein by reference the arguments made above with respect to claim 62.

Further, claim 67 further recites "*wherein said system comprises an information presentation technology system in which more information is presented regarding media content corresponding to a high level of interest and less information is presented regarding media*

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*content corresponding to a low level of interest".* This feature is discussed in the present Application at page 22, lines 3-9.

The Examiner asserts that this feature is disclosed in Handel at Figures 10A, 12, 25, col. 29, lines 30-67, col. 30, lines 1-15 and 33-49.

However, Appellant respectfully submits that the Examiner's position is flawed as a matter of fact and as a matter of law. Specifically, nowhere do the cited columns teach or suggest this feature.

Therefore, Appellant respectfully submits that neither Tognazzini, nor Black, nor Handel, nor any alleged combination thereof teaches or suggests each and every element of the claimed invention as recited in claim 67. Therefore, the Board is respectfully requested to withdraw this rejection.

Therefore, the dependent claims define elements and limitations which further place the claimed invention squarely in the realm of statutory subject matter and which provide a useful, tangible and concrete result.

Therefore, the dependent claims like independent claims 1, 12, 23, 34, 45, and 53-55, include at least one element which is not taught or suggested by the cited references, or any combination of the cited references.

In view of all of the foregoing, Appellant respectfully submits that the Examiner's rejections are erroneous as a matter of fact and law

## VIII. CONCLUSION

In view of the foregoing, Appellant submits that claims 1-67, all the claims presently pending in the application, are patentably distinct from the prior art of record and in condition for allowance.

Therefore, the Board is respectfully requested to remove the rejections of claims 1-67.

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Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Assignee's Deposit Account number 09-0441.

Dated: 8/15/05

Respectfully submitted,



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**CLAIMS APPENDIX**

1. A system for unobtrusively detecting a subject's level of interest in media content, comprising:
  - means for detecting a subject's attention to said media content;
  - means for measuring said subject's relative arousal level; and
  - means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content.
2. The system according to claim 1, wherein said detecting means includes means for determining a target to which a gaze of the subject is directed.
3. The system according to claim 2, wherein said determining means further includes means for determining a duration of fixation time of said gaze.
4. The system according to claim 3, wherein said measuring means includes means for determining whether the subject is attending to the media content.
5. The system according to claim 4, wherein said measuring means further includes means for measuring the subject's facial gestures.
6. The system according to claim 5, wherein said measuring means further includes means for measuring the subject's head gestures.
7. The system according to claim 6, wherein said measuring means further includes means for measuring the subject's speech.
8. The system according to claim 1, wherein said measuring means includes means for



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measuring the subject's facial gestures.

9. The system according to claim 1, wherein said measuring means includes means for measuring the subject's head gestures.

10. The system according to claim 1, wherein said measuring means includes means for measuring the subject's speech.

11. The system according to claim 1, wherein said level of interest produced provides relevance feedback associated with said subject to a manager of said media content.

12. A system for unobtrusively detecting an object of a subject's interest in media content, comprising:

- means for detecting an object of said subject's attention;
- means for measuring the subject's relative arousal level; and
- means for determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content.

13. The system according to claim 12, wherein said detecting means includes means for determining a target to which a gaze of the subject is directed.

14. The system according to claim 13, wherein said determining means further includes means for determining a duration of fixation time of said gaze.

15. The system according to claim 14, wherein said measuring means includes means for determining whether the subject is attending to the media content.

16. The system according to claim 15, wherein said measuring means further includes means

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for measuring the subject's facial gestures.

17. The system according to claim 16, wherein said measuring means further includes means for measuring the subject's head gestures.

18. The system according to claim 17, wherein said measuring means further includes means for measuring the subject's speech.

19. The system according to claim 12, wherein said measuring means includes means for measuring the subject's facial gestures.

20. The system according to claim 12, wherein said measuring means includes means for measuring the subject's head gestures.

21. The system according to claim 12, wherein said measuring means includes means for measuring the subject's speech.

22. The system according to claim 12, wherein said level of interest produced provides relevance feedback associated with said subject to a manager of said media content.

23. A method of unobtrusively detecting a subject's level of interest in media content, comprising:

detecting a subject of said subject's attention;

measuring a subject's relative arousal level; and

determining said level of interest based on information regarding said subject's arousal level and said subject's attention to said media content.

24. The method according to claim 23, wherein said detecting includes determining a target

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to which a gaze of the subject is directed.

25. The method according to claim 24, wherein said determining further includes determining a duration of fixation time of said gaze.

26. The method according to claim 25, wherein said measuring includes determining whether the subject is attending to the target information.

27. The method according to claim 26, wherein said measuring further includes measuring the subject's facial gestures.

28. The method according to claim 27, wherein said measuring further includes measuring the subject's head gestures.

29. The method according to claim 28, wherein said measuring further includes measuring the subject's speech.

30. The method according to claim 23, wherein said measuring includes measuring the subject's facial gestures.

31. The method according to claim 23, wherein said measuring includes measuring the subject's head gestures.

32. The method according to claim 23, wherein said measuring includes measuring the subject's speech.

33. The method according to claim 23, wherein said level of interest produced provides relevance feedback associated with said subject to a manager of said media content.

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34. A method of unobtrusively detecting the object of a subject's interest in media content, comprising:

detecting the object of said subject's attention;  
measuring the subject's relative arousal level; and  
determining said level of interest based on information regarding the subject's arousal level and said subject's attention to said media content.

35. The method according to claim 34, wherein said detecting includes determining a target to which a gaze of the subject is directed.

36. The method according to claim 35, wherein said determining further includes determining a duration of fixation time of said gaze.

37. The method according to claim 36, wherein said measuring includes determining whether the subject is attending to the target information.

38. The method according to claim 37, wherein said measuring further includes measuring the subject's facial gestures.

39. The method according to claim 38, wherein said measuring further includes measuring the subject's head gestures.

40. The method according to claim 39, wherein said measuring further includes measuring the subject's speech.

41. The method according to claim 34, wherein said measuring includes measuring the subject's facial gestures.

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42. The method according to claim 34, wherein said measuring includes measuring the subject's head gestures.
43. The method according to claim 34, wherein said measuring includes measuring the subject's speech.
44. The method according to claim 34, wherein said level of interest produced provides relevance feedback associated with said subject.
45. A method for detecting a person's level of interest in media content, comprising:  
assessing whether a person is attending to the media content, to produce first data;  
assessing a person's relative arousal level with regard to the media content, to produce second data;  
determining said level of interest in said media content based on said first and second data; and  
communicating said level of interest as feedback about the media content to a manager of said media content.
46. The method according to claim 45, wherein said assessing includes determining a target to which a gaze of the person is directed.
47. The method according to claim 46, wherein said assessing further includes determining a duration of fixation time of said gaze.
48. The method according to claim 45, wherein said assessing includes determining whether the person is attending to the media content.

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49. The method according to claim 45, wherein said assessing includes measuring a person's facial gestures.

50. The method according to claim 45, wherein said assessing includes measuring the person's head gestures.

51. The method according to claim 45, wherein said assessing includes measuring the subject's speech.

52. The method according to claim 45, wherein said level of interest produced provides relevance feedback associated with said subject.

53. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for computer-implemented unobtrusive detection of a subject's level of interest in media content, said method comprising:

detecting an object of said subject's attention;

measuring a subject's relative arousal level; and

determining said level of interest based on information regarding said subject's arousal level and said subject's attention.

54. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for computer-implemented unobtrusive detection of a subject's level of interest in media content, said method comprising:

assessing whether a subject is attending to the media content, to produce first data;

assessing a subject's relative arousal level with regard to the media content, to produce second data;

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determining said level of interest in said media content based on said first and second data; and

communicating said level of interest as feedback about the media content to a manager of said media content.

55. A system for unobtrusively measuring a subject's interest in media content, comprising:  
a detector for detecting a subject's attention to said media content;  
a measuring device which measures a subject's arousal level; and  
an inference engine which infers subject's interest level based on information regarding said subject's arousal level and said subject's attention to said media content.

56. The method according to claim 53, wherein said physical attribute of said subject includes at least one of a facial gesture, a head gesture, a blink rate and blink duration, a relative position of an eyebrow, and a relative position of a mouth corner.

57. The method according to claim 56, wherein said physical attribute of said subject further includes at least one of an audio utterance, a gaze fixation density, a pupil size, upper body movement.

58. The method according to claim 56, wherein additional media content is provided in real time to said subject based upon the inferred level of interest.

59. The method according to claim 54, wherein said physical attribute of said subject includes at least one of a facial gesture, a head gesture, a blink rate and blink duration, a relative position of an eyebrow, and a relative position of a mouth corner.

60. The method according to claim 59, wherein said physical attribute of said subject further includes at least one of an audio utterance, a gaze fixation density, a pupil size, and an upper

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body movement.

61. The method according to claim 59, wherein additional media content is provided in real time to said subject based upon the inferred level of interest.

62. The system according to claim 1, wherein said determining means adaptively infers said level of interest.

63. The system according to claim 1, wherein said determining means uses at least one of a Bayesian Belief Network, a decision tree and a neural network to determining said level of interest.

64. The system according to claim 1, wherein said determining means comprises a means for adaptively learning said subject's level of interest in said media content.

65. The system according to claim 1, wherein said system comprises an information presentation technology system in which more information is presented regarding media content corresponding to a high level of interest and less information is presented regarding media content corresponding to a low level of interest.



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**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that the foregoing Appeal Brief was filed by facsimile with the United States Patent and Trademark Office, Examiner Steven P. Sax, Group Art Unit # 2174 at fax number 571-273-8300 this 15<sup>th</sup> day of August, 2005.



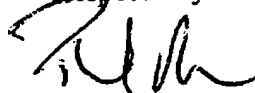
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**EVIDENCE APPENDIX**

Submitted herewith is a Rule 131 Declaration submitted in the present Application on April 28, 2003. The Examiner indicated that the Declaration was entered in the Office Action dated September 29, 2003.

Respectfully Submitted,



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